

Revision Exercise Year 10

Number Representation

1) Fill in:

Decimal	Binary	Hexadecimal
87		
	10011101011	
		2E

- 2) Write the following decimal numbers in (i) Sign and Magnitude representation and (ii) in two's complement. Both representations use one byte.
- 48
 - 77
- 3) Why is two's complement better than sign and magnitude to represent negative numbers?

Databases

4) A relational database is made up of the following two tables: Cars and Owners.

Cars

Regist. No.	Model	No. seats	ID. Owner
8337 ABC	Stapler 44	5	119711
BE HAPPY	Penny	3	938822
89383HA	Keys 89	4	884733

Owners

ID	Surname	Name	Address	Tel
938822	Borg	Joe	2, Church Street, Fgura	284828
884733	Zammit	Mark	33, Blue Street, Msida	844302

- Give examples of the following:
 - Field
 - Record
 - Primary key
 - Foreign key
- Who owns the Penny model?

- c. Write down the names of all owners that own a car with more than 3 seats.
 - d. What is the kind of relationship that exists between the tables Cars and Owners (one-to-one or one-to-many)? Why?
- 5) What do we mean by the following terms?
- a. Variable-length records
 - b. Query
 - c. Form

Master File and Transaction File

- 6) Explain what master file and transaction file are.

Architecture

<http://emmanuelattardcassar.me/SEC%20Computer%20architecture.pdf>

- 7) Describe briefly the following components of a computer system:
- a) CPU
 - b) Memory
 - c) Storage
 - d) I/O subsystem
 - e) Buses
 - f) System clock
 - g) ROM
 - h) Cache
- 8) The three basic characteristics that differentiate microprocessors are the instruction set, the bandwidth, clock speed. Explain.
- 9) What is the role of the following units inside a CPU: (i) CU, (ii) ALU, (iii) registers, (iv) cache.
- 10) What is the role of the following registers (i) accumulator, (ii) CIR, (iii) PC?
- 11) What is the difference between a CISC and a RISC processor?
- 12) Explain what we mean by the fetch-decode-execute cycle?
- 13) What is the difference between DRAM and SRAM?
- 14) Compare the hard-disk, the tape and the pen drive.
- 15) What is the role of the device driver in a computer system?

- 16) What is the role of a buffer?
- 17) What is the difference between a parallel and a serial bus?
- 18) Describe the three buses that form the system bus.
- 19) What is the role of the system clock?
- 20) .
 - a. Why is it important that the ROM is non-volatile?
 - b. Describe two programs that are found in the ROM.
- 21) What is the difference between memory cache and disk cache?

Computer Logic

<http://emmanuelattardcassar.me/SEC%20Computer%20Logic.pdf>

- 22) Write the truth tables of the logical operators AND, OR, NOT, NAND, NOR and XOR.
- 23) Remember that:
 - $P.R$ represents P AND R
 - $P+R$ represents P OR R
 - P' represents NOT P

If $P=1$, $Q=0$ and $R=1$ evaluate the following expressions:

 - a) $P + Q.R'$
 - b) $P.(Q' + R)$
 - c) $(P.Q)'+ R$
- 24) Draw the logic circuit of the following Boolean expressions:
 - a. $A' + B.C$
 - b. $(A.C + B').A$
 - c. $(A.C' + B)' + C$
- 25) Draw the truth table of the Boolean expressions (a) and (c) of the previous question.
- 26) Prove the following identity by showing that the truth table of the left-hand expression is identical to the truth table of the right-hand expression.

$$P.(Q + R') + PR = 1$$

- 27) Look at the truth table below and fill in the expressions marked by a question mark.

L	M	N	?	?	?
0	0	0	0	0	1
0	0	1	0	1	0
0	1	0	0	1	1
0	1	1	0	1	0
1	0	0	0	0	1
1	0	1	0	1	0
1	1	0	1	1	1
1	1	1	1	1	0

Operating System

<http://emmanuelattardcassar.me/Operating%20Systems%20SEC%20notes.pdf>

- 28) What is an operating system?
 29) Give two examples of what an operating system does.
 30) Write whether the following are true or false

a) The operating system is not a program.	
b) When the computer is switched on the operating system is the first program loaded inside the RAM.	

- 31) Put the following statements in the correct sequence (the first one is made for you):

The word processor passes the print command to the operating system.	
The printer receives the order to print and it prints the document.	
The user is working with a word processor and gives a command to the word processor to print a document.	1
The operating system communicates with the hardware of the computer so that the printing is done.	

- 32) Put the following statements in the correct sequence (the first one is made for you):

After half a second the operating system stops X (temporarily) from executing.	
After half a second the operating system stops (temporarily) program Y.	
A program X is executing (using the CPU).	1

The operating system calls program Y to use the CPU.	
The operating system calls program X to continue execution.	

33)

- a. What is a resource?
- b. What is a sharable resource?
- c. Give two examples of sharable resources.

34) Name two applications programs that are best executed by means of batch processing.

35)

- a. Name one application that requires a critical real-time operating system to operate.
- b. Name one application that can run in a non-critical real-time operating system.

36) Name one advantage and one disadvantage of a time-sharing system as compared to a batch processing operating system.

37) Name two features of a networked operating system.

Utilities

<http://emmanuelattardcassar.me/Lesson%20Utilities.pdf>

38) A virus (or malware) can cause different kinds damage. Mention three.

39) An antivirus looks for virus signatures. What is a virus signature?

40) Name three features that can be found in a backup utility.

41) What does a disk repair program do?

42)

- a. Name two advantages of a compressed file.
- b. What is the difference between lossy and lossless compression?

43) Why is encryption important?

44)

- a. What is it that cause fragmentation?
- b. What does a computer gain after defragmentation?

- 45) What does a file manager utility do?
- 46)
- a. What is disk partitioning?
 - b. Name an advantage of disk partitioning?
- 47) Find two other utilities and describe them briefly.

IT Department

<http://emmanuelattardcassar.me/Lesson%20IT%20Department.pdf>

- 48) Explain briefly the role of the following:
- a. Systems analyst
 - b. Programmer
 - c. IT trainer
 - d. Data entry clerk
 - e. Web master
 - f. Computer technician
 - g. Computer engineer

System Development Life Cycle

<http://emmanuelattardcassar.me/Lesson%20System%20Analysis.pdf>

- 49) What do we mean by System Development Life Cycle?
- 50) Name the 8 stages of SDLC and briefly describe each stage (2 sentences on each stage).
- 51) Name two tests made on software and write a sentence on each.

Data Protection Act

<http://emmanuelattardcassar.me/Data%20Protection%20Act%20and%20Plagiarism.pdf>

- 52) What is the Data Protection Act about?
- 53) What is a Data Controller?
- 54) Name two functions of the Data Commissioner.
- 55) What is plagiarism?

Java

See the following:

- <http://emmanuelattardcassar.me/Exercise%20on%20Flowcharts.pdf>

- <http://emmanuelattardcassar.me/Exercise%20on%20if%20and%20flowcharts.pdf>
- <http://emmanuelattardcassar.me/Exercise%20on%20For%20Loops%20and%20Flowcharts.pdf>
- <http://emmanuelattardcassar.me/Exercise%20on%20For%20and%20While%20loops.pdf>
- Exercise found here:
<http://emmanuelattardcassar.me/Lesson%20Java%20Simple%20Methods.pdf>
- Exercise found here:
<http://emmanuelattardcassar.me/Lesson%20Java%20Methods%20with%20Parameters.pdf>